15¢

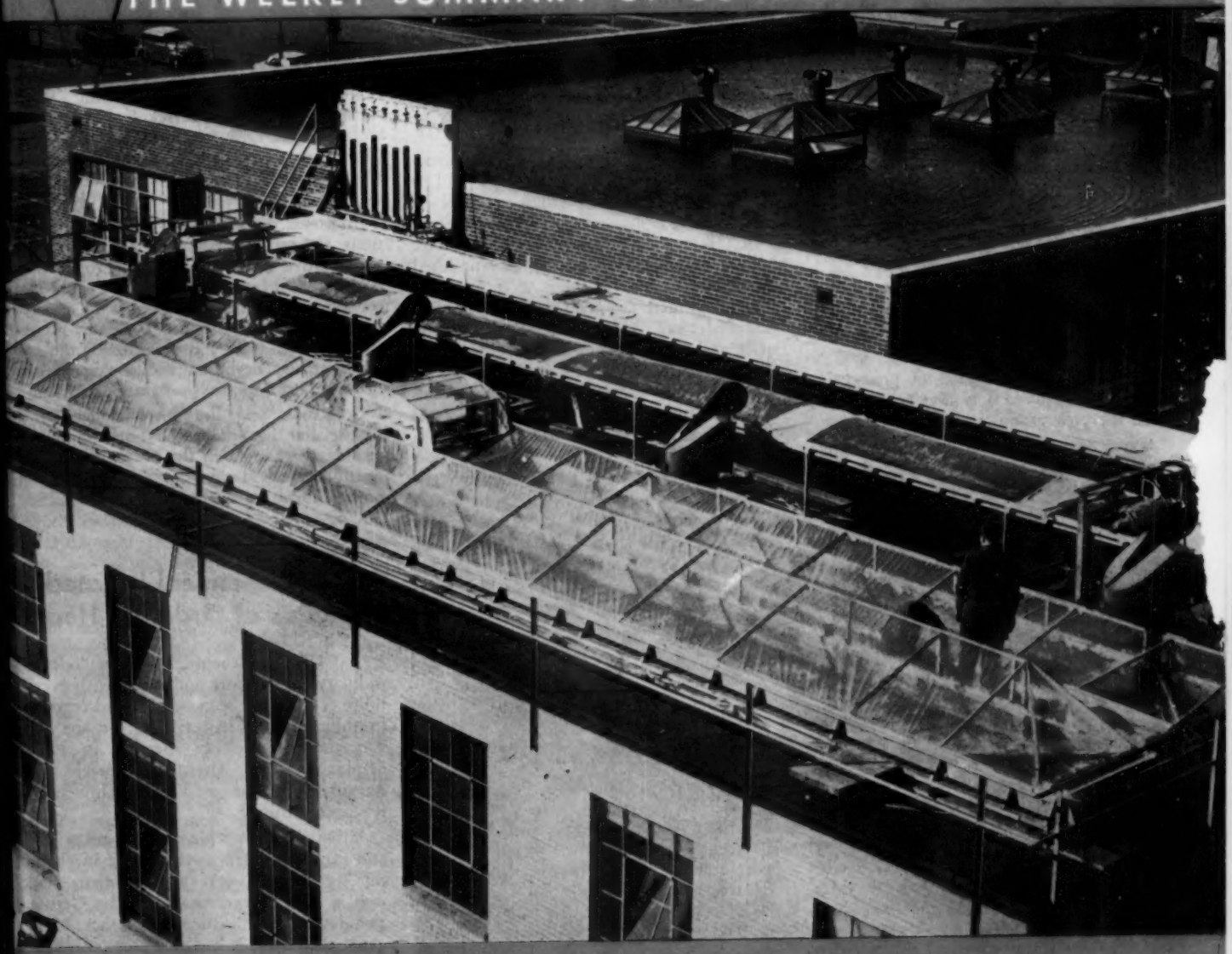
January 5, 1952

# SCIENCE NEWS LETTER

TECHNOLOGY DEPT.

PUBLIC LIBRARY
JAN 11 1952
DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE



## Future Food Factory?

See Page 10

A SCIENCE SERVICE PUBLICATION

$5.50 A YEAR

VOL. 61 NO. 1 PAGES 1-16

R v.61-62 1952

GENERAL SCIENCE

# Ban Wonder Drugs

**Sick Russians do not get wonder drugs because of political doctrines. Orthodox Marxians favor treatment of pneumonia patients with novocaine injections.**

➤ IF YOU were a sick Russian your life would not be saved by the wonder drugs of western science because of the political doctrines of Marx and Engels revered today by the Soviet controllers of thought.

To the American Association for the Advancement of Science meeting in Philadelphia ideological attacks upon the use of chemotherapy and antibiotics were reported. Instead, orthodox Marxians in official favor urge the treatment of certain types of pneumonia and tumors by the injection of novocaine. According to Communist scientific doctrine, the novocaine cures by working on the central nervous system which supposedly controls the whole body.

Dr. Conway Zirkle of the University of Pennsylvania, who led the discussion of Soviet science, explained that the Russians have reverted to ideas that were outmoded in the western world a hundred years ago. One such idea is that the cell, as the basic unit of living matter, does not need to originate from the division of pre-existing cells. One Soviet idea is that cells develop from the yolk granules in eggs.

Some Soviet scientists seem more interested in life on other planets than they are in earthly plants and animals. There is much attention to what is called astrobotany. The Soviet scientists are sure that life exists on Mars and because they claim that the Martian climate resembles that found in parts of Siberia, the plants of that region are being explored intensively. Presumably these scientists go to Siberia willingly for this purpose.

In the field of cosmic rays, which is also remote from everyday life, the Soviet experts are said to be doing relatively good work.

The mentally ill Russians do not get much help from their doctors due to the dialectical materialistic fiats under which they must work. Pavlov, a great physiologist now dead, is worshipped, and ideas beyond or counter to his theories do not have a chance.

Dr. Ivan D. London, research fellow of Harvard's Russian Research Center, explained that since 1949, the Pavlov centenary, his supposed ideas have been used to stifle progress in physiology, psychology and psychiatry.

In the treatment of patients with severe mental illness, some therapy is accomplished along lines similar to those of the western world, but there are great shortages of competent doctors, technical workers, hospital space and drugs, except for the elite. Hope for the future of Russian psychiatry lies in the probability that their psychiatrists will be more interested in curing their patients than upholding the Pavlovian ideas now in high favor.

Not one new or original idea, either right or wrong, has been produced by the Soviet biologist heroes, Lysenko and Michurin and their followers, Dr. Theodosius Dobzhansky of Columbia University, leading geneticist, told the meeting. Official Soviet biology is now a reactionary movement, regressing to ideas long abandoned by scientists of other nations.

Science News Letter, January 5, 1952

ASTRONOMY

# Minor Planet Hit Moon

➤ A MINOR planet 125 miles or so across collided with the moon and exploded some 100,000 years ago. Large chunks of matter containing huge pieces of iron-nickel alloy miles long, thrown violently in all directions, tore long grooves in the lunar landscape as they skimmed across the moon's surface. Gray silicates formed ridges radiating outward from the point of impact.

Thus does Dr. Harold C. Urey, Nobelist of the University of Chicago's Institute for Nuclear Studies, picture the formation of Mare Imbrium, the best-known of the "seas" on the moon. Not seas at all, these flat formations are actually vast dry plains.

The moon's surface has been modified but slightly since this collision, Dr. Urey told members of the American Astronomical Society meeting in Cleveland. All of this occurred just about the time the moon became fully formed.

Mare Imbrium is the only big "sea" which contains craters. Even it has none in the region where the collision took place. Such craters as existed at that time probably were drowned by the liquid lava that flowed out of the moon when the asteroid crashed through the newly-formed lunar crust.

Black ridges west of the Copernicus crater may be raw planetary material, Dr. Urey pointed out.

The flying mountain-in-the-making that produced Mare Serenitatis, formed just before Mare Imbrium, fell directly downward into the moon. It produced the black lavas of Mare Tranquilitatis and later was itself covered by the gray lavas of Imbrium.

Dr. Urey's picture of what happened to the moon in its last days of formation fit in well with the creation of the moon's markings as visualized by Dr. Ralph B. Baldwin, also of the University of Chicago. Both believe that Mare Imbrium is the most recently formed of the "seas."

Science News Letter, January 5, 1952

ANTHROPOLOGY

## Communism and Democracy Suppress Inquiries

➤ BOTH SOVIET Russia and the western world refuse to allow their social scientists to make an objective evaluation of the fundamental principles underlying their cultures, Dr. Russell L. Ackoff, research associate of the Case Institute of Technology, Cleveland, declared before the American Association for the Advancement of Science meeting in Philadelphia.

In Russia, as well as in the western nations, the social sciences are forced to play conservative roles, he charged. Propaganda is studied intensively, but basic political, economic and social assumptions underlying each culture are not evaluated scientifically. The time and energies of the experts are spent upon influencing public opinion, attitudes and morale.

In Russia and the Soviet sphere, this suppression has prevented any major extension or changes in the Soviet concept of scientific method since Lenin's formulation of dialectical materialism.

Science News Letter, January 5, 1952

CHEMISTRY

## Strange Chemical Isolated, Explodes at Ordinary Heat

➤ A CURIOUS chemical that explodes at ordinary temperature and reacts with everything organic has been isolated and reported to the American Association for the Advancement of Science meeting in Philadelphia by Drs. Alfred Engelbrecht and Aristid V. Grosse of Temple University's Research Institute.

Although this purple-vapored green solid and liquid, permanganyl fluoride in chemical composition, was actually first made over a hundred years ago by the German chemist, Wohler, called the father of organic chemistry, it had not previously been prepared in its pure state.

The Temple chemists used silica-free glass and transparent plastics in their manufacture of the chemical, which corrodes ordinary glass and quartz.

If it is kept at dry ice temperatures, the compound does not explode and can be kept for months.

Science News Letter, January 5, 1952

Tech

GENERAL SCIENCE

# Synthetic Future Forecast

**Man's scientific future foreseen as bringing clothing made from coal and oil, cures for any human ills and people "kittenish" at 100.**

➤ MANKIND'S SYNTHETIC future forecast by a leading organic chemist, Dr. Roger Adams of the University of Illinois, foresees:

People happy, healthy and kittenish at the age of 100.

Clothing made from coal and oil.

Cure of any human ailment by a variety of drugs and medicinals.

Storage of the sun's energy for man's use.

Fish ranches in fenced-off water, rivaling cattle ranches.

Deliberate molding of people, mentally and physically, by drugs.

Pears, apples and oranges the size of grapefruit.

And even interplanetary football matches and celestially-anchored hot-dog stands along rocket ship routes.

Dr. Adams, principal speaker and retiring president of the American Association for the Advancement of Science meeting, projected at that organization's annual meeting in Philadelphia the chemical discoveries of the past to logical achievements in the future.

Pointing out that a century ago all materials used by man were derived directly from the natural sources of plants, animals and minerals, he explained that the chemist can now determine the atomic patterns in nature's substances and assemble atoms to his own design. Man creates new, better and cheaper compounds.

Already dyes are 99% synthetic, drugs and medicinals are 75% synthetic and natural gums and resins account for only 5% of the 2.3 billion pounds of plastics produced last year in the United States. Half the paint, half the rubber and a fifth of the textiles are synthetic. A billion pounds of synthetic detergents are produced annually, although more soap than that is still consumed.

Titanium is the metal of the future, in Dr. Adams' opinion, since it is the fourth in abundance of all metals and its ores are widespread. It is only half as heavy as steel, ductile in pure form, valuable in alloys, heat and chemical resistant, even to sea water and in jet engines. High price due to difficulty in separating it from its ores is the problem, and Dr. Adams predicts that a cheaper way will be found and it will come into wide use.

Mineral deposits of ores of less common metals, such as copper, lead, zinc, manganese, chromium, tungsten and tin, will be found deeper in the earth and under lakes and seas, he forecast.

The sea, from which magnesium, bromine and salt are now extracted commercially, will be mined in the future for other elements.

Exhaustion of the supplies of oil, natural gas and coal in the earth's crust has been predicted periodically for three decades, but Dr. Adams observed that still new reserves continue to be discovered, though with greater difficulty and at increased expense. He prophesied that when the time of exhaustion finally arrives scientists will have found substitutes or this kind of fuel will no longer be needed.

Industry has now turned to petroleum for a substantial portion of its chemicals for the synthesis of dyes, drugs, plastics and synthetic fibers. Just a decade or two ago these were made largely from coal tar, the volatile liquids obtained when coal is coked.

Future power for the world will come from the use of solar energy, in Dr. Adams' opinion. The energy that reaches earth from the sun is over 30,000 times that of all the fuel and water power now used. Algae growth in water which can quintuple the yield of the best land growth may be one successful method of collecting the sun's energy. Replacement of the green chlorophyll of the plant by synthetic dyes and inorganic chemicals in the method of artificial photosynthesis appears promising. Energy absorption by glass shows promise of surpassing the best agricultural capture of sun energy. And phosphorus might be employed to absorb energy from the sun during the day and for illuminating purposes at night, Dr. Adams suggested.

An extraordinary development of synthetic polymers, the chemicals that are giant molecules manufactured from very simple molecules, was predicted, added to the amazing plastics and fibers now commercially available or about to come out of laboratories.

The future will see, according to Dr. Adams, transparent plastics that will not gradually discolor and the surface of which will not scratch or craze, finishes for wood and metals which will remain durable for long periods of time in the presence of sunlight and salt air, transparent, flexible, waterproof and moistureproof film which will be as strong as desired.

A rayon will come on the market with a basic structure so modified that it has strength when wet equal to that of natural fibers.

***JET-PROPELLED LABORATORY—The nation's first jet-propelled "laboratory," now placed in operation for the high-speed flight testing of turbo-jet engines, is shown here in flight. The test engine is housed in the nacelle under the bomb bay. The plane is equipped with hundreds of special instruments which will record every phase of the test engine's performance in flight.***

The chemists will not be able to find a synthetic fiber that will dry rapidly like nylon and at the same time allow moisture to penetrate it like cotton, Dr. Adams explained, because these two properties are incompatible.

But he predicted that synthetic fibers will replace the natural fibers, with half the wool now consumed substituted by synthetics within 10 to 20 years, and this discovery of strong, durable, moisture-absorbing synthetic fibers to replace cotton. The cotton-replacing plastics will replace natural leathers for shoe tops, for which artificial leathers are now unsatisfactory because they do not allow moisture of the feet to penetrate and escape.

Food crops, thanks to chemical modification of plant metabolism, will have the plant size dwarfed and the fruit, kernels or ears are larger, Dr. Adams foresees. Chemicals that speed the growth of plants will be improved so that pears, apples and oranges will be the size of grapefruit.

The ultimate in insecticides, visualized by Dr. Adams, is a chemical, repellent to all insects and mites, innocuous to the plant and to higher animals, which when sprayed on the leaves will be absorbed and completely translocated by means of the plant juices. To feed plants, he suggests that a combination of minerals and fertilizer be absorbed through the leaves instead of fertilizing the soil.

Chemicals will be available in the future to sterilize the soil completely toward grasses and weeds but not toward the desired crop.

Oceans will furnish more of the world's food in the future, Dr. Adams believes, and there will be a more systematic fishing industry than at present with fish ranches, large water areas fenced off and handled like cattle ranches. Marine plants for food, fuel or chemical use will be grown and harvested like land crops.

Chemicals to kill the viruses that cause such stubborn diseases as colds, poliomyelitis, meningitis, influenza, virus pneumonia, mumps and measles will be found in the next decades, Dr. Adams predicted. The organic chemist will succeed in providing products which will eliminate susceptibilities toward the degenerative diseases, such as cancer, heart disease, and arteriosclerosis.

Since hormones and other drugs affect the mental attitude as well as the physical well-being of people, Dr. Adams forecast that the future may bring us a series of drugs which will permit deliberate molding of a person, mentally and physically. Control of such chemicals would be a great public problem. They would present dire potentialities in the hands of an unscrupulous dictator.

As to interplanetary rocket flights, Dr. Adams considered predictions in this field outside his specialization of chemistry. But he did call attention to the need of dining compartments of enormous size for a trip to Jupiter that would need 666 days, even if food concentrates were used and people require less food under gravity-free conditions. Perhaps there will be celestially-anchored hot-dog stands along the way. But, in his opinion, it will be many, many decades before rocket ships are built that will accelerate to the 25,000 miles an hour required to escape from earth's gravity.

Science News Letter, January 5, 1952

ASTRONOMY

## Star Light Changed By Cosmic Iron Dust

➤ LIGHT FROM many of the stars in the constellation of Aquila, the eagle, vibrates slightly more in one direction than in another.

Light from at least two-thirds of the 300 faint stars within a half square degree area in Aquila is polarized to at least 1.5%, Joseph L. Gossner of the U. S. Naval Observatory told members of the American Astronomical Society meeting in Cleveland.

These stars are so far from the earth that light which started from them some 1,000 or more years ago is just now reaching our planet. At some time in its journey the light passed through a dust cloud containing many iron particles which polarized it. Light from stars in this constellation that are closer to us has not been polarized.

Science News Letter, January 5, 1952

## Question Box

**ASTRONOMY**

What gas has been positively identified in the sun's atmosphere for the first time? p. 6.

**BIOCHEMISTRY**

To what insect poison has the search for an anti-cancer drug led? p. 15.

**BOTANY**

How can chrysanthemums be tricked into blooming at any time of the year? p. 8.

**GENERAL SCIENCE**

Why do sick Russians not get treated with wonder drugs? p. 2.

**PHYSICS**

How are snow crystals formed? p. 12.

**SURGERY**

In what way can polio-disabled hands be remade? p. 9.

**TECHNOLOGY**

How do water injections help our oil supply? p. 11.

What are some of the new snow removal methods? p. 12.

**Photographs:** Cover, Arthur D. Little, Inc.; p. 3, General Electric Corporation; p. 5, University of Wisconsin; p. 7, U. S. Department of Agriculture; p. 10, Science Service.

**SCIENCE NEWS LETTER**
VOL. 61 JANUARY 5, 1952 No. 1

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc. 1719 N St., N. W., Washington 6, D. C., NOrth 2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright, 1952, by Science Service, Inc. Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C. under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566 and 360 N. Michigan Ave., Chicago. STAte 2-4822.

**SCIENCE SERVICE**

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, Princeton University; Karl Lark-Horovitz, Purdue University; Kirtley F. Mather, Harvard University. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; R. A. Millikan, California Institute of Technology; L. A. Maynard, Cornell University. Nominated by the National Research Council: Ross G. Harrison, Yale University; Alexander Wetmore, Secretary, Smithsonian Institution; Rene J. Dubos, Rockefeller Institute for Medical Research. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Baltimore Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate: Frank R. Ford, San Francisco News; John T. O'Rourke, Washington Daily News.

Officers—President: Harlow Shapley; Vice President and chairman of Executive Committee: Alexander Wetmore; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Jane Stafford, A. C. Monahan, Marjorie Van de Water, Martha G. Morrow, Ann Ewing, Wadsworth Likely. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. In London: J. G. Feinberg.

BIOCHEMISTRY

## Chemical Study Promises Cheaper Vitamin D

➤ CHEAPER WAYS of making vitamin D and various hormones were forecast through discovery of the manner in which NBS chemical, once a mere laboratory curiosity, takes part in transforming cheap sterols into valuable medicinal chemicals.

Dr. Geoffrey R. Buckwalter, research manager of F. H. Levey Co., Philadelphia, and Prof. Roderick A. Barnes of Rutgers University reported to the American Association for the Advancement of Science meeting in Philadelphia, new chemical substances that can cause transformations similar to the N-bromosuccinimide (NBS) chemical.

Science News Letter, January 5, 1952

ASTRONOMY

## Short-Cut to Figuring Path of New Comet

➤ A SHORT-CUT to determining where a newly-discovered comet is going was reported by Dr. Allan D. Maxwell of Howard University at the American Astronomical Society meeting in Cleveland.

No all-night sessions to calculate a comet's position, Dr. Maxwell promised astronomers, if the comet is observed at approximately equal intervals. Much involved computation can be omitted. With a simple slide rule, within a few hours experts can calculate where to look for the comet a month or so ahead.

Use of the differences between given quantities rather than the quantities themselves is the secret of Dr. Maxwell's method. A trigonometric table is consulted at the beginning of the computation, but is not used again.

This new method was tried with good success on Comet Pajdusakova, the first comet reported this past year, Dr. Maxwell said. The results agreed fairly well with other, more involved computations requiring many hours. They were accurate enough to indicate where to look for the comet among the stars.

Science News Letter, January 5, 1952

INVENTION

## Picture Frame That Wafts Odors Gets U. S. Patent

➤ DELIGHTFUL AND appropriate odors will surround pictures of landscapes on the wall, a tangy smell of the ocean in the case of a seascape, with a picture frame, patented recently, which contains means of emitting the odors.

The theory behind the invention seems to be that a good picture should satisfy the nose as well as the eye. Patent 2,577,320 was issued to Julius Fenyo, Freeport, N. Y.

Science News Letter, January 5, 1952

*SELF-DUMPING LAKE—Lake George, in the mountains of southeastern Alaska, dumps itself about Aug. 1 of each year, dropping the water level by more than 100 feet. Details of the water flow through a gorge in the ice and into the sea were studied last summer by Prof. Kirk H. Stone of the University of Wisconsin.*

ASTRONOMY

# Spiral Nebulae Studied

### Gigantic pinwheels in the heavens trail behind their spinning centers, series of short exposures of spiral nebulae, mostly edgewise, show.

➤ THE ARMS of spiral nebulae, those gigantic pinwheels in the heavens, trail behind their spinning centers, new evidence indicates.

A series of very short exposures were used by Dr. John B. Irwin of Indiana University to study these heavenly pinwheels of stars and hot gases, most of which are seen edgewise rather than full-view.

The longest exposure of the series was just over three minutes, in contrast with exposures of 20 minutes or more frequently used by astronomers to study these faint, hazy clouds of light.

The short exposures showed the position of the central "hot spot" of the nebulae with great accuracy, Dr. Irwin told the American Astronomical Society meeting in Cleveland. The brightest part of these watch-shaped galaxies is not centered in the apparent center of the spiral as it appears to us, he pointed out. Dust and gas dim our view of part of the nucleus. Thus the apparent center of brightness is displaced toward the galaxy's nearby edge.

The edge of the bright nucleus nearest us is always sharper and less diffuse than the far side, he stated. These two additional tests will help astronomers determine which way a particular galaxy is rotating.

The direction of rotation is of rather fundamental importance in the dynamical theory of these huge systems of stars and gases. Astronomers are not yet agreed as to which direction the spirals are spinning, or whether some are winding their arms up on themselves while others are unwinding.

The Milky Way galaxy, of which the sun is one star in a hundred billion, is believed to be a gigantic spiral. But because we are inside the spiral, we have been unable to discover whether the arms are being drawn inward or are moving outward.

To find which way a galaxy is rotating, astronomers must not only measure the

motions of various parts of the spiral galaxy, but must determine which edge is nearest the earth. This must be done by studying photographs of the galaxy itself.

Two tests for determining which side of a galaxy is nearer the earth were suggested a number of years ago by Dr. E. P. Hubble of Mount Wilson and Palomar Observatories in California. His observations led him to conclude that the arms are trailing. Dr. Irwin examined 18 galaxies, applying to them Dr. Hubble's two tests and his two new ones. The arms of each trailed behind the twirling center, he found.

Science News Letter, January 5, 1952

INVENTION

## American Inventors Earned 44,356 Patents During 1951

➤ THE U. S. Patent Office found 1951 a busy year, issuing 44,356 patents or 1,284 more than during 1950. The weekly average output was 853, while for 1950 it was 828. The actual number issued each week hovered close to the year's weekly average.

Patents for new chemical compounds and improved processes for making old chemicals stand high in number, again indicating America's leadership in the chemical field. Notable among these chemicals are pharmaceuticals, dyestuffs, insecticides, fertilizers, fungicides, explosives, detergents, fuels, synthetic fibers, weed-killers, water softeners and many others for use in the industries, the household or on the farm.

Metallurgists have received many patents during the year, particularly for new alloys, including some able to better withstand the high temperatures in gas turbine and jet engines, others with increased strength or hardness, and several assured longer life because better able to resist corrosion.

Substitute metals may come into wider use, replacing common metals now in short supply, because of new processes of treatment discovered. For instance, aluminum containing a small amount of boron has the necessary strength to replace copper for electrical wiring. Magnesium containing three of the so-called rare metals has strength and durability and will find many applications.

During 1951, as in other years, many patents have been issued to individual inventors but rights are assigned to some department or other of the United States Government. For the most part these inventors are working for the government directly or in research laboratories under specific contract with the government. Manufacturers throughout the country can usually get a license to make the items so patented without payment of royalties. In a recent government publication available from the U. S. Government Printing Office for one dollar is a list of 2,339 patents owned by the government which American businessmen can use without charge. Its title is Government-Owned Inventions for Free Use.

Science News Letter, January 5, 1952

ASTRONOMY

# Carbon Monoxide In Sun

**Find definite evidence of this gas, concentrated high in the sun's atmosphere where temperature is about 5,000 degrees Centigrade, from infra-red spectrum.**

➤ CARBON MONOXIDE gas is now definitely known to exist in the sun's atmosphere.

Carbon monoxide, composed of one atom of carbon and one atom of oxygen, has long been believed to be one of the most abundant molecules in the sun's atmosphere. Its presence, however, has just been positively identified by Drs. Leo Goldberg, R. R. McMath, O. C. Mohler and A. K. Pierce of the McMath-Hulbert Observatory, University of Michigan.

The gas is concentrated high in the sun's atmosphere, where the temperature is about 5,000 degrees Centigrade. It signaled its presence in the infra-red region of the sun's spectrum.

Carbon monoxide is at least 40 times more plentiful than any of the other molecules that have been observed in the sun, Dr. Goldberg reported to the American Astronomical Society meeting in Cleveland.

Discovery of this gas will aid astronomers in two ways:

1. More information can be obtained about the temperatures and pressures existing in the upper layers of the sun's atmosphere.

2. Better information should now become available on the abundance of carbon and oxygen in the sun.

The observations which led to discovery of this gas were made with a lead sulfide photo cell and infra-red spectrometer both at the Mt. Wilson Observatory in California and at the McMath-Hulbert Observatory. This photo cell, a recent development, made it possible to study the infra-red portion of the sun's spectrum in great detail.

In the earth's atmosphere, carbon dioxide is generally abundant, but its half-brother, carbon monoxide, is much rarer and more irregular in its distribution.

"It must provisionally be concluded that carbon monoxide in the earth's atmosphere is localized in a most peculiar fashion," Dr. Goldberg pointed out.

Carbon monoxide has been detected high over the Jungfraujoch in Switzerland, but not in the air over Mount Wilson in California. It has been found over Columbus, Ohio, but is absent in the atmosphere over Flagstaff, Ariz.

Smog in the Los Angeles area might be expected to contain this gas, the Michigan astronomers point out, and some should be observed over nearby Mount Wilson. So far, however, carbon monoxide has not been detected from Mount Wilson. Further observations are planned in an effort to clear up this mystery.

Science News Letter, January 5, 1952

MEDICINE

# Joint Injections Relieve

➤ INJECTION OF a close relative of cortisone directly into joints made painful by some kinds of arthritis, gout and bursitis brings relief.

Four Philadelphia physicians report that hydrocortisone or compound F can be used effectively in this new way.

In 69 patients with rheumatoid arthritis and 39 patients with osteoarthritis this method of using hydrocortisone gave prompt relief of pain, stiffness, swelling and tenderness in almost all cases. These good results and details of the treatment are reported by Drs. Joseph L. Hollander, Ernest M. Brown, Jr., Ralph A. Jessar and Charles Y. Brown, of the Hospital of the University of Pennsylvania, in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Dec. 22).

Hydrocortisone, like cortisone, is produced by the adrenal glands. Used in joint injections it is much more effective than cortisone used in the same way, the doctors found. The reason for this difference is not known. The doctors suspect it is because hydrocortisone is only one-seventh as soluble as cortisone in blood plasma and therefore stays around the inflamed joint longer.

Results of this treatment in a few cases of bursitis, gout, disseminated lupus erythematosus and eye inflammations complicating rheumatoid arthritis are encouraging.

The joint injections of hydrocortisone must be repeated in order to keep the effect. In some patients these repeated injections have been continued successfully for as long as eight months.

Hydrocortisone is expected to be available to doctors generally within a short time. The amount needed for a weekly joint injection is small enough, the Philadelphia doctors point out, so that the cost should not keep patients from its benefits.

Science News Letter, January 5, 1952

***ALL-AMERICA WINNER—A head of Salad Bowl lettuce and some possible ingredients for making a tossed salad show an All-America vegetable winner for 1952.***

GENETICS

# Old Age Hereditary Habit

**Infirmities of old age may be hereditary habit picked up in course of man's evolution. Pattern that comes out automatically with advancing years called "genetic copying."**

➤ THE INFIRMITIES of old age may be just a bad hereditary habit that the higher animals, including man, have picked up in the course of their evolution. This is the theory of Prof. P. B. Medawar, F.R.S., who has just been inaugurated as head of the London University zoology department.

These infirmities are a hereditary habit, in the sense that originally they may have been the results of fair wear and tear on each individual. But their constant repetition in the course of evolution has fixed them so firmly in the hereditary pattern that today they come out automatically with advancing years. Prof. Medawar calls it "genetic copying."

Prof. Medawar realizes that his theory smacks of the now spurned pre-Darwinian evolutionary theory of Lamarck, but sees evidence in support of his suggestion in the lines of the hands and the skin on the soles of the feet.

The main lines of the hands—heart, head, life and fate lines to the palm-reader—originally arose as use creases, worn into the hands of each individual in the course of a lifetime of handshutting. In the process of evolution these lines have become a habit of heredity and now appear in the palms of the newborn infant, which has not yet used its hands.

The same is true of the thickened skin on the soles of the feet, now genetically copied in each newborn babe, possibly because thousands of generations of its forebears developed tough soles by walking on them.

Where old age is concerned, Prof. Medawar suggests that in the distant past the feebleness of old age may have come about entirely from the knocking about the individual got from accidents and illnesses. As evolution progressed this feebleness was copied into our racial heredity so that today we are born to become feeble, and we ache and ail as we grow old largely from force of genetic habit.

Science News Letter, January 5, 1952

AGRICULTURE

## New Garden Lettuce and Bush Snapbean Developed

➤ A NEW leaf lettuce called "Salad Bowl," developed by the U. S. Department of Agriculture, is the first lettuce ever to win the All-America Selections' gold medal. The loose-leaf lettuce, heat-resisting and long-lasting, this summer will flourish in many home gardens.

An outstanding all-purpose bush snapbean called "Wade," another Agriculture Department development, won the other coveted gold medal for 1952. The pods are straight and round, stringless, fiberless and of high quality.

Almost everybody with a garden will want to plant the new lettuce and snapbean. Seeds of both these vegetables and other All-America Selections for 1952 are now available from seed dealers.

A heavy-bearing, heat-resisting spinach from Holland, named "America," was granted a silver medal. Other silver medal winner was a Cushaw pumpkin called "Allneck," an elongated, large and almost solid fleshed vegetable.

Science News Letter, January 5, 1952

ASTRONOMY

## One Instrument Records Three Things About Stars

➤ AN INSTRUMENT has now been designed to record simultaneously the brightness and color of a star, and at the same time to show whether the star's light is polarized (vibrates more in one plane than another).

Two photomultipliers, three amplifiers and three recording systems are used in the new instrument, Dr. John S. Hall of the U. S. Naval Observatory told members of the American Astronomical Society meeting in Cleveland.

When a nicol prism or a piece of polaroid is used to discover whether a star is polarized, half of the light entering the apparatus is completely lost. It is this light which Dr. Hall utilizes to measure concurrently the color and magnitude of a star and to determine its spectral type.

A rotating cylinder of calcite separates the star's light into two equally bright beams. One beam from the calcite cylinder is used to determine both the plane of polarization and its amount. The other beam of light is passed through a rotating disk containing violet, blue and green filters which make it possible at once to measure both the color and brightness of the star.

Observations of 50 stars with this instrument have shown that reliable measures of polarization, magnitude and color can readily be obtained for stars of the tenth magnitude and brighter, Dr. Hall reported.

Science News Letter, January 5, 1952

AGRICULTURE

## Spraying Corn from Ground Better Than Airplane Dusting

➤ GROUND RIG sprays of DDT may replace airplane dusting for corn earworm, a serious sweet corn pest.

O. G. Bacon of the University of California College of Agriculture, Berkeley, in the third year of field trials against the pest, found that three applications of DDT with a ground rig gave very good control at less cost than the usual five to seven airplane dustings per season.

The ground rig used was equipped with a boom fitted with spray nozzles to spray two rows of corn. As it passes through the corn field it shoots the spray on both sides of the plant aiming at the area where the ears are growing. Commercial machines are capable of spraying as many as six rows of corn.

Several new insecticides were used in the tests but DDT gave the best results.

In general, airplane applications have not resulted in as good control as sprays applied by ground equipment. The airplane dustings do not always cover the corn silk, where the chemical is most needed. The problem of dust drift to adjoining fields makes airplane applications unsatisfactory at times.

Individual hand brushing with dust and individual hand spraying with a paint-type spray gun were also tested using DDT and other chemicals. Both methods of application gave good results but required a large number of workers to cover the fields quickly.

Science News Letter, January 5, 1952

BOTANY

## Mums Bloom Any Month When Day Length Shortened

➤ CHRYSANTHEMUMS CAN be tricked into blooming at any time of the year and the principles of producing hybrid corn can be applied to roses.

Leonard E. Carrier, landscape gardening and ornamental horticulture expert at the University of California's College of Agriculture, Davis, is producing greenhouse chrysanthemum blooms all during the year by shortening the daylight periods after the plants are about a month old.

If the plants get more than 13 hours of sunlight they continue to grow. When the length of day is cut down to nine hours mums will begin to bloom in about two months. It is necessary to keep night temperatures about 60 degrees Fahrenheit in the greenhouse where the mums are growing.

On long days the day length is shortened by shading the plants with blackout curtains, Mr. Carrier said.

To grow plants during short winter days artificial light is used to lengthen the daytime period. After the plants are about a month old they are put on a nine-hour daylight schedule for bloom production.

The University of California floriculturist is also hoping to produce vigorous roses of good color and quality that are disease resistant.

Several inbred lines from a parent rose are being produced by "selfing"—pollinating a rose with its own pollen. Each of these lines will be further selfed. Selfed lines are more consistent in their makeup than crossed lines.

Third or fourth generations of these selfed lines will then be crossed with each other. The strong points of two or more inbred strains will, Mr. Carrier hopes, combine to produce outstanding, vigorous roses.

Science News Letter, January 5, 1952

CHEMISTRY

## Turn Clods Into Soil By Synthetic Chemical

➤ GARDEN SOIL in minutes of work instead of seasons of weathering is promised by a new chemical. It is related to materials which are formed naturally in humus by bacterial action.

The new chemical is a synthetic that was revealed by chemists of the Monsanto Chemical Co. at a symposium on improvement of soil structure at the meeting of the American Association for the Advancement of Science in Philadelphia.

The soil improvement chemical will come on the market soon under the name of Krilium. It is undergoing extensive tests at agricultural experiment stations in many parts of the country. It will be useful especially where heavy clay soils are a problem.

Krilium will become available for home gardeners this spring in limited quantity, and in full commercial production in about a year.

Even the raw subsoil turned up by steam shovels at new housing developments can be turned into soil suitable for lawns and flower beds. This can be done the first year by working into it only a few pounds of Krilium per acre, in the experience of the Monsanto chemists.

The new soil conditioner changes the structure of clay, making it porous and crumbly. Young seedlings get a better start and established plants receive more air and nourishment in this improved soil.

Hydrolyzed polyacrylonitrile is the chemical designation of the new product. Its use was suggested to the Monsanto chemists by the fact that somewhat similar chemicals, known as polyuronides, are formed naturally by soil bacteria. The natural products, unlike Krilium, are destroyed by other bacteria. Because Krilium is not attacked by soil organisms, it gives soil scientists, for the first time, a means of distinguishing between plant growth due to good surroundings alone and that assisted by organisms living in the soil.

Science News Letter, January 5, 1952

## IN SCIENCE

ENGINEERING

## Giant Brain Cuts Cost of Tabulating Census Returns

➤ AN ELECTRONIC computer, often called a giant brain, is cutting costs in tabulating results of the 1950 census, the American Institute of Electrical Engineers and the Institute of Radio Engineers meeting in Philadelphia were told by James L. MacPherson of the U. S. Bureau of the Census and Sam N. Alexander of the National Bureau of Standards.

The Bureau computer uses what is called the Univac system. The machine was constructed by the Eckert-Mauchly Computer Corporation of Philadelphia under contract with the Bureau of Standards for the Census Bureau.

"We have great confidence that high speed electronic computers hold high promise for the census," the engineers were told.

At its present level of performance the Univac produces results for about half the cost of doing the same work with other equipment, it was stated. It is believed, however, that it can, and eventually will, be improved to the extent that this ratio will be much more favorable, the scientists added.

Science News Letter, January 5, 1952

INVENTION

## Improved Method For Casting Magnets

➤ BETTER PERMANENT magnets of the so-called Alnico type, which contain iron, aluminum, nickel and cobalt and have unusual strength, are promised with an improved casting process which has been awarded a patent.

The process results in markedly improved magnetic directional properties, it is claimed. Such properties mean that the magnetic force is greater in one direction than in a direction at right angles. They have been obtained in the past by a heat treatment in a magnetic field.

In the new method the magnets are cast in molds or cavities in which heat loss through the sides during solidification is held to a minimum. The heat is removed from one end by means of a metal chill in direct contact with the molten alloy. This causes lengthwise extending crystals to form in the solidifying metal mass.

Inventor is Dolph G. P. Ebeling, Troy, N. Y. His award is patent 2,578,407. Rights have been assigned to General Electric Company, Schenectady, N. Y.

Science News Letter, January 5, 1952

# ENE FIELDS

METEOROLOGY

## Miamian Says Florida Like Man's Evolutionary Climate

➤ FLORIDA is a "new tropical frontier" for northern man. In the tropical regions of Florida, man can return to a slightly more temperate version of the regions in which he probably first existed, according to Meteorologist Robe B. Carson.

If man is at all capable of maintaining physical and mental vigor under tropical conditions, the southeast coast of Florida is the place to try, Mr. Carson says. He points out that every once in a while, the temperature in Miami gets down to freezing, bringing just a touch of the northern climate in which man achieved so much.

Man's tropical origin, Mr. Carson says, is written into his body. He is better adapted to heat than to cold. On the other hand, man has had difficulties in adapting temperate climate to his needs. He has had to build up food stocks to last the winter and heat his home to provide the climate he is suited for.

Whether he can return to a climate like that of his evolution is still an unanswered question. But, according to Mr. Carson, the Florida tropics, with adequate summer cooling power and mild winter stimulation, seems an unusually happy blending of temperate and tropical conditions, an environment in which men may realize new potentialities.

Mr. Carson is supervisor of the Miami Flight Advisory Weather Service. His statements were made in ECONOMIC GEOGRAPHY (Oct.).

Science News Letter, January 5, 1952

ASTRONOMY

## Navigators Saved Errors By Planet Calculations

➤ NAVIGATORS OF the future will be saved some puzzling results and even miscalculations by publication of new positions for the five outer planets during the next century.

Just made available by the Nautical Almanac Office of the U. S. Naval Observatory, the 327-page volume lists the positions of Jupiter, Saturn, Uranus, Neptune and Pluto at 40-day intervals for 407 years. It is titled: "Coordinates of the Five Outer Planets, 1653 to 2060."

The orbits of these outer planets have needed re-calculating for some time because of great discrepancies between predicted and observed positions. In a few more years these errors would have affected even the accuracy of routine navigation in aircraft and surface ships, sometimes throwing them off their course.

Three astronomers cooperated to complete these calculations. They were: Dr. W. J. Eckert, director of Pure Science for International Business Machines Corporation and professor of celestial mechanics at Columbia University; Dr. Dirk Brouwer, director of the Yale University Observatory; and G. M. Clemence, director of the Nautical Almanac Office at the U. S. Naval Observatory.

The actual calculations were performed on IBM's giant Selective Sequence Calculator.

Science News Letter, January 5, 1952

AGRICULTURE

## Develop New Strawberries And Two Blueberries

➤ A NEW strawberry and two new blueberries will make their appearance next summer. In 1953 you will probably be able to purchase them in local markets if they come up to expectations.

The Albritton strawberry, an outstanding producer, and the Angola blueberry, which ripens earlier than any commercial variety now grown, were selected from crosses under study by Dr. George M. Darrow of the U. S. Department of Agriculture and Prof. E. B. Morrow of the North Carolina Experiment Station. Dr. Darrow selected the Ivanhoe blueberry, noteworthy for its large, good-flavored berries, from experimental plantings in New Jersey.

The Albritton strawberry is ideal for shipping as it has a tough skin and firm flesh. Deep red and exceptionally glossy when fully ripe, there are about 59 berries per pound. Its production averaged 360 crates per acre in 1951 trials at Willard, N. C., as compared with 280 crates an acre for Massey, well-known commercial strawberry, and only 188 crates for Missionary, another widely-produced variety.

Although tested only in eastern North Carolina, the new strawberry appears suitable for production in the East from Delaware south to northern Georgia, and in corresponding latitudes across Mississippi, Alabama, Louisiana and southern Arkansas.

Earliness and high resistance to stem canker make the Angola blueberry unusually promising for North Carolina where this disease is a serious threat to the crop. This blueberry ripens in May, before any other commercial variety is ready for market.

The second new blueberry also has high resistance to canker disease. During four years of testing the Ivanhoe blueberry averaged 86 to a cup, as compared with 142 for Stanley, a commercial variety used as a parent in developing this new berry. It is recommended as an early mid-season variety for North Carolina and for limited trials north to southern New England.

Science News Letter, January 5, 1952

ENGINEERING

## Bacteria Cause Stain On Iron and Steel

➤ RECENT RESEARCH has shown that bacteria can cause stains on ferrous metal surfaces.

A. W. Lindert, research expert for the Standard Oil Company of Indiana, told a meeting of the Milwaukee chapter of the American Society of Lubrication Engineers that bacteria can thrive on oil as well as dirt. They are in the water which forms part of the soluble oil emulsion used to cool metal being worked in machine shops.

The emulsion is also designed to prevent rust. The oil does that. But because bacteria can live in the water and form organic acids from the hydrocarbons in the oil, the emulsion was found to be having the very effect it was designed to avoid. The acids ate into the metal, staining it so that only more machining would remove the stains.

The remedy is to change the emulsion frequently as the operation nears the end, to "tailor" the oil to the hardness of the water and to provide an extra emulsion bath for the finished part.

Science News Letter, January 5, 1952

SURGERY

## Polio-Disabled Hands Can Be Remade Surgically

➤ HANDS disabled by poliomyelitis can be remade by surgical operations.

The surgical techniques for such remodelling were learned through rehabilitation work on the wounded in World War II, Dr. C. E. Irwin, medical director of the Georgia Warm Springs Foundation, points out in a report from the National Foundation for Infantile Paralysis.

"The careful execution of well planned operative procedures can often transform a disabled hand into one of almost normal appearance and one capable of a surprising amount of dexterity," Dr. Irwin states. "Patients may again use a typewriter, play the piano, fasten a button and do many other dexterous functions which otherwise would be impossible."

According to Dr. Irwin, the highest level of function which surgery can restore to the disabled hand depends on several factors: The severity of the paralysis left in the aftermath of the disease, the quality of physical therapy administered; the proper evaluation of the patient's problem by the surgeon, plus the skill with which the subsequent operative procedures are executed, and the patient's cooperation.

"Rapid strides are being made in surgery on the hand disabled by poliomyelitis," Dr. Irwin concludes. "Many of these patients can by surgery be restored to a rightful position in their environment and returned to the economic level enjoyed by their normal associates."

Science News Letter, January 5, 1952

GENERAL SCIENCE

# Science Outlook for 1952

**Shortage of scientific manpower is problem for coming year. Possibility of test of hydrogen bomb foreseen. Research on using sun's energy will continue.**

By WATSON DAVIS

**See Front Cover**

➤ IF THE world continues to teeter on the brink of an all-out world war or if an armed era of relative peace is established during 1952, continued progress in many fields of pure and applied science, technology and invention can be expected. Widespread destructive war would wreck many advances in progress.

The question of scientific and technical manpower will become more critical in the coming months. Defense and industrial leaders realize that steps must be taken to encourage capable young people to enter into scientific and engineering study if the United States is to keep up with the Soviet Union in available scientists and engineers. Uncertainties of the draft and possible universal military service, coupled with the likelihood of presidential election year smears upon actively constructive efforts, may interfere further with steps to remedy the shortage.

Use of new forms of atomic weapons will be made if more widespread war develops. These will include small atomic bombs propelled by artillery or guided missiles used in support of ground troops.

There is a chance that the fusion or so-called hydrogen bomb will be tested, but probably the public will not know whether or not it is successful.

## Atomic Power Applied

Significant advances in use of atomic power for propelling submarines, other ships or airplanes will not come to fruition in the next year although intensive development will continue. Commercial use of atomic power will be delayed by military applications.

Information on the making of fissionable uranium 233 (useful in bombs) out of thorium will probably be obtained in the Arco, Idaho, breeder reactor, but it will be held secret.

Research on photosynthesis, the capturing of sun energy, will continue, but without more expenditure of brains and money on this key problem decisive practical results during the coming year hardly can be expected.

Before the secret of photosynthesis is discovered and duplicated, the energy of the sunshine may be utilized more effectively through the use of some of the lowly, one-celled plants, the algae. Experiments on mass production of Chlorella, one of the green algae, should tell us in the coming year whether it can be used as food for people or animals and whether it is an economical and practical raw material and energy source.

Shown on the cover of this week's SCIENCE NEWS LETTER are the test tubes on the top of the building at Cambridge, Mass., from which scientists hope a commercial process for a new food source will emerge.

In medicine, look for more new surgical operations, including on the heart, and more use of "banks" from which nerves, bones, and other body replacements are used for successful repair of damage caused by disease and accident.

There is always the chance that a new antibiotic, of the class of penicillin, will be proved useful, even upon one of the more resistant and serious diseases.

Much research will be done upon the key medical problem of treating effects of the powerful radiations of the atomic bomb. As a result we may be in a better position to save some of those who may be in range of any atomic bombs that are dropped.

*AAAS PRESIDENT-ELECT — Dr. Edward U. Condon, director of research and development, Corning Glass Works, is the new president-elect of the American Association for the Advancement of Science.*

There will be continued inquiry into individual human differences with the chance that refined biochemical tests and metabolic determinations will be used to detect them. Such research approaches promise to aid our understanding of normality as well as of mental illnesses. There may be advances in treatment of mental ills as a result.

Better human relations in factories, communities and even between nations are likely as more recognition is given to the psychological and sociological factors in communicating information, ideas and motivations.

Because we live in a world in which the proportion of older people is constantly increasing, better understanding of the aging process and means for counteracting the effects of growing old will be sought with some success in the near future.

## Nutrition Factors

Some new factors or trace elements needed for healthy nutrition in man, animals, insects and plants will probably be discovered, adding to the multiplicity of vitamins and other elements that are known to be necessary.

A total eclipse of the sun will be seen from a path across middle Africa and the troubled Near East. Astronomers will observe it, probably at Khartoum, making optical and radio observations upon it. Some new facts about the ionosphere and effects of solar radiation upon it will probably result.

Discovery of hundreds of variable stars in the nucleus of the Andromeda nebula will be announced.

The mystery of the stars that are known, not by their light, but by radio microwaves emitted by them, will probably be solved in part by the identification of the source of the radiation.

The world's largest coronagraph, a device for artificially eclipsing the sun and observing its activity, will go into service high in the American Rockies to give more information on the effect of the sun on radio communication, weather and other terrestrial happenings.

The new kind of electronic device, called the transistor, which replaces the conventional and more bulky electron tube, will be used more widely, with one application making possible smaller-sized hearing aids.

New understanding of protein structure being obtained will begin to explain chemical processes, particularly in living matter, with the chance of application to medicine and genetics.

Electronic computing machines will be applied to more problems during the year, some of them non-military.

## Forecast Last Year Told Many Happenings of 1951

➤ THE SCIENCE forecast for 1951 issued a year ago by SCIENCE SERVICE saw fulfillment during the past year in a number of instances.

The difficulties over the admission of foreign scientists to the United States due to the McCarran act were predicted. Due to an unwillingness of astronomers from non-iron curtain countries to go to Soviet Russia for international astronomical meetings scheduled for early August 1951, these meetings were postponed, as the SCIENCE SERVICE forecast anticipated.

They might have been moved to the United States except for the barriers that the McCarran act placed in the way of even temporary entry into the United States of foreign scientists who have had any connection, however remote, with communism or nazism. International chemical meetings in New York and Washington lost some of their leading scientists because of the rigid congressional enactment.

As forecast, the exploration of atomic particles in cosmic radiation continued, with the possible discovery of the anti-proton or negative proton.

The National Science Foundation put into effect a national fellowship plan to speed fundamental scientific research, as predicted.

The secret of how the green plant utilizes sunlight, the process called photosynthesis, was under continued investigation in a number of laboratories, with the Atomic Energy Commission putting $200,000 a year into such research, but as the SCIENCE SERVICE forecast suggested, photosynthesis could not be duplicated artificially in that short time.

The continued rocket and jet developments predicted resulted in the announcement of the beginning of quantity production for our armed forces of the Matador guided missile.

The expected expanded use of antibiotic drugs continued, with aureomycin being applied to a precancerous condition. Cortisone progress also continued and synthesis from more plentiful raw materials was announced during the year.

The need for building psychological and social foundations for future peace, pointed out in the forecast a year ago, was fulfilled in a measure by the formation of the Psychological Strategy Board within the U. S. government and the barrage of message-carrying balloons that were sent into iron curtain countries from free Europe.

Science News Letter, January 5, 1952

ASTRONOMY

# Survey by Moon's Shadow

➤ A NEW method for calculating the exact size of the earth is being developed by astronomers. Some day the shadow of the moon, cast when it passes between the earth and a bright star, will be used in surveying.

The lapse of time between the instant the moon's shadow strikes the earth at one location and at another spot farther east is lengthened 50% by the fact that the observers are moving forward with the rotating earth, Dr. John A. O'Keefe and Miss Pamelia Anderson of the Army Map Service told members of the American Astronomical Society meeting in Cleveland.

The shadow of the moon cast by one of the heaven's brightest stars can occasionally be seen on a clear night. The shadow cast by a less bright star is seldom seen, but it can be recorded with a photo-electric device. The instant the star's light is cut off can be timed with extreme accuracy as the moon has little if any atmosphere at all and the light is cut off quite suddenly.

When two observers at different positions on the earth time the instant the shadow of a particular feature of the moon is cast on the ground, the length of the path followed by the shadow of this feature of the moon is readily calculated.

Within the last year or two, teams of photoelectric observers and surveyors from the Army Map Service of the Corps of Engineers in four pairs of locations in the western part of the United States have timed the passage of the moon's shadow from one location to another. The shadow cast by the same star was observed on the same night for each pair of observations.

"The agreement between velocities of the shadow as calculated from theory and the observed shadow velocities was excellent," Dr. O'Keefe stated. "The average discrepancy between the computed and the observed position of the shadow was 38 feet."

The earth's radius is believed chiefly to cause this discrepancy. This distance from sea level to the center of the earth enters the calculation in two ways.

Science News Letter, January 5, 1952

INVENTION

## Easy Newspaper Reading For Bifocal Wearers

➤ EASY READING of the top of a newspaper without tilting the head back is promised the wearer of bifocal spectacles with a vertically adjustable type which brought patent 2,578,318 to Henry Ronicker, West Milton, and Roy A. Horn, Dayton, Ohio. They enable the wearer to raise the line of vision through the short focal areas to a horizontal position.

Science News Letter, January 5, 1952

TECHNOLOGY

## Water-Injection Important In Recovering Additional Oil

➤ RESTORING PRODUCTIVITY of oil wells exhausted by the ordinary pumping to additional production by water pressure was a subject of vital importance at the meeting of the American Petroleum Institute in Chicago. Vast additional quantities can be obtained by water-injection, it was stated, to meet present and future needs in defense and civil activities.

The East Texas salt-water injection program has become the most important conservation measure ever applied to an individual field in the United States, the petroleum scientists were told by Paul D. Torrey, Oil Recovery Chemicals, Austin, Texas.

"It is indicated that this program," Mr. Torrey declared, "will result in the recovery of an additional amount of oil which will be larger than the combined primary and secondary production of most of the world's individual fields."

In the water-injection method, water under high pressure is forced down a central well to drive oil through the rock formations in which it is deposited to the pumping wells.

Unit operations to accomplish maximum recovery of oil and gas from a production pool are adding hundreds of millions of barrels to the reserves of the United States, the petroleum men were told by H. H. Kaveler, Phillips Petroleum Co., Bartlesville, Okla.

Ultimate recovery is substantially independent of the well spacing and the number of wells drilled, Mr. Kaveler said.

Science News Letter, January 5, 1952

Tungsten-Mercury-Uranium!
Find VITAL WAR METALS!
with Ultra-Violet
Mineralight!
MINERALIGHT instantly identifies mercury, tungsten and many other valuable minerals now in demand for rearmament.
5 MINERALIGHT models for every requirement. Money-back guarantee.

FREE
Send for FREE brochure on "Prospecting for Scheelite (tungsten) with Ultra-Violet".
ULTRA-VIOLET PRODUCTS, Inc.
145 Pasadena Avenue, South Pasadena, Calif.

PHYSICS

# NATURE RAMBLINGS

### Fragile Individualists

➤ SNOW CRYSTALS by the trillions have fallen from gray skies through all the millions of winters this old earth has seen. Yet it is most probable that no two in all those countless hosts have ever been exactly alike. Certainly no two snowflakes in the many thousands that have been examined by scientists have ever been identical.

There is, indeed, in the manner in which snow crystals are formed, easy enough chance for infinite variety. They start as raindrops start, with the attachment of water molecules to nuclei in the clouds.

These nuclei may be almost any kind of particle—microscopic grains of dust, minute salt crystals. Snow crystals differ from forming raindrops, of course, in that the change is from waper vapor to the solid, or ice, phase rather than to liquid.

Basic crystal pattern of solidifying water is a hexagonal plate. The first few molecules electrically seized by the nuclei presumably arrange themselves in a six-sided pattern. But water molecules are exceedingly minute, and by the time some hundreds of millions of them have assembled to form even a little snow crystal, the interplay of forces in even that small frame of action can have worked out a pattern that has never existed before.

There are, however, certain family resemblances among snow crystals, which you undoubtedly have noticed if your study has been no more ambitious than a casual glance at white bits falling on your coat.

Some of the fragile jewels of the snow are exceedingly intricate and lacy in outline, others are of a more severely simple pattern, still others are intermediate in the elaborateness of their structure. Very rarely are two classes of crystals seen during the same snowstorm.

Differences in size of snow crystals, which are correlated with differences in the intricacy of their patterns, are believed to be related with the heights, and hence the temperatures, of their formation.

The smallest crystals, which have a doric simplicity of outline, fall from the highest clouds. The largest and laciest crystals are the product of lower altitudes, where there is plenty of moisture but temperatures are very far below the ordinary freezing temperatures as we know them at ground level. Graceful intermediate patterns, neither very severe nor yet over-elaborate, come from the middle heights.

Science News Letter, January 5, 1952

MINERALS USED IN THE MANUFACTURE OF GLASS, EARTHENWARE CHINA AND FIRE-PROOF BRICKS. 15 specimens 1½ x 2" plus in compartment box 9 x 12 x 1". Price $3.00 prepaid.

COLLECTION OF RADIOACTIVE MINERALS. 9 specimens in compartment box 6 x 9 x 1". Size of specimens 1" plus. $4.50. Express prepaid. Can not be shipped through mail. Booklet, Introduction to Geology for the layman 50¢, including complete geological catalogue.

ECKERT MINERAL RESEARCH & NATUREGRAPH CO.
Dept. SNL
110 E. Main St.
Florence, Colorado

AGRICULTURE

## Manure Faddists Make Fallacious Claims

➤ A "BOISTEROUS GROUP" of manure farming faddists is making "fallacious claims on the superiority of manure over mineral fertilizer."

This is the charge of J. S. Joffe of the New Jersey Agricultural Experiment Station, Rutgers University, made before the annual meeting of the American Association for the Advancement of Science in Philadelphia.

Mr. Joffe went over the extensive research done in the last 100 years and concluded that there is no ground for the claim that organic fertilizer is superior to inorganic fertilizer. "If anything," he said, "they are inferior."

Mr. Joffe went over six points having to do with soil structure, nutrients, moisture, microbes, residual humus and accessory elements and found the claims made by manure faddists to be exaggerated.

Science News Letter, January 5, 1952

TECHNOLOGY

# Snow Removal Methods

➤ IN SPITE of new methods of clearing snow from walks and streets the snow shovel is not yet obsolete. Neither are the snowplows and scrapers that pile the city snow in the gutters to become a nuisance for many days if cold weather continues or removal steps are not taken. The new methods developed are not all ready for general use.

Science seems to think the best way to remove snow from city streets and sidewalks is by melting it so that it will take itself away as water through the drainage system. One method is to have the fire department flush the streets with city water. If the weather is cold the method has little success. Salt water from the city harbor is more effective in cities close to the sea.

Widely used throughout the United States is treatment with common salt or calcium chloride. It is a successful method but has its drawbacks. Salt tracked into a house on wet shoes may injure rugs. The salty water thrown up against the underside of an automobile aids corrosion. And there is some evidence that salt is injurious to the concrete surface of the roadway.

Among new snow-removal methods now proposed and already in use to a certain extent is melting by flame-throwers similar to those developed during the war to drive enemies out of fox-holes. One type has the flame-thrower attached to the front of a truck with a supply of liquid fuel in tanks on the motor vehicle. Whether the method is cheap enough for extensive use is not yet known.

Radiant heat is also used. In this method, pipes embedded in the paving carry steam or hot water from adjacent buildings. Several large stores in New York City are keeping adjacent sidewalks clear by this method. The ramps which buses climb into New York's new giant bus station are radiant heated. In Oregon a steep hill on a highway is piped with hot water from a nearby hot spring.

Among new developments is a chemical to mix with salt before it is spread on a road that prevents much of the corrosion to automobiles that occurs otherwise.

For the door steps and perhaps the front walk, is an electrically heated rubber mat which operates on the household current. It is made of a conductive rubber, a type developed to prevent icing on airplane propellers and the leading edges of aircraft wings. Its surface is grooved so that the melted snow on it runs off to the sides.

Science News Letter, January 5, 1952

BIOCHEMISTRY

## Announce New Growth Stimulant—for Fungi

➤ DISCOVERY OF a new growth stimulant, called Coprogen, was announced by Drs. C. W. Hesseltine and A. R. Whitehill of Lederle Laboratories, Pearl River, N. Y., at the meeting of the American Association for the Advancement of Science in Philadelphia.

Found in the fermentation products of certain bacteria and fungi, Coprogen is the hitherto unknown factor needed for growth and reproduction of a fungus, *Pilobolus kleinii*.

Science News Letter, January 5, 1952

## ● RADIO

***Saturday, Jan. 12, 1952, 3:15-3:30 p.m. EST***

**"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.**

**Dr. Hart E. Van Riper, medical director of the National Foundation for Infantile Paralysis, and Dr. Jonas E. Salk, department of bacteriology, University of Pittsburgh, will discuss "The Fight Against Polio."**

BIOCHEMISTRY

## Alcoholics Are Born With Food Needs Hard to Satisfy

➤ PEOPLE LIKELY to become alcoholics are those born with dietary needs that are hard to satisfy, Prof. Roger J. Williams of the University of Texas declared at an American Chemical Society meeting in Austin, Tex.

"As soon as they begin violating the rules of good nutrition by drinking quantities of alcoholic liquor, deficiencies develop," he said. "These deficiencies stimulate craving for alcohol and a vicious cycle is developed. People who get everything they need nutritionally never become alcoholics."

Animals on the best diets, research at the University has shown, do not drink alcohol. Those on deficient diets always do. This study has been extended to humans with an intense craving for alcohol.

Many have had their craving completely abolished by getting their nutritional needs satisfied so that they need not drink in an uncontrolled manner any longer, Prof. Williams reported.

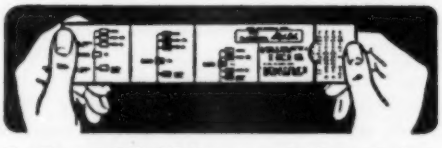
"Even the taste of liquor," he stated, "does not act as a compelling force to make them drink more."

The same idea applies to certain mental diseases, in Prof. Williams' opinion. Certain people are born with metabolic machinery which is susceptible to damage and likely to become deficient as a result of mental stress.

So-called "thick-skinned" persons have systems which are not readily disturbed. They function whether nutrition is ideal or not. Such persons, Prof. Williams said, never have mental disease.

Science News Letter, January 5, 1952

**New Revised! 800 Element Facts at Your Fingertips!**



**The Elemental Slyd-Rul now completely up to date. Symbol, weight, density, number, valences, color, M & BP in °C for 98 elements plus recent name changes. Vinylite case.**

**$1.00 postpaid. Student rate: 12 or more, 70c ea.**

**The Slyd-Rul Co., Canaan, N. Y.**

GENERAL SCIENCE

# Botanist Helps Time Death

➤ A PROFESSOR of botany who could tell the rate of growth of a vine and the season at which it had its growth helped a coroner solve a dead-body mystery, the coroner, Dr. S. R. Gerber of Cleveland, told the American Association for the Advancement of Science meeting in Philadelphia.

The "Time of Death" symposium at which Dr. Gerber spoke was crammed with scientific facts detective story writers and even gangsters would find useful, although it was planned to help law enforcement officials, doctors and the general public in pursuit of justice.

The botany case reported by Dr. Gerber was one in which a tendril of vine was growing through the hair of the corpse when found. The body was nearly completely decomposed. And the validity of a divorce and marriage as well as the disposition of considerable property would be affected, Dr. Gerber knew, by the date of death in this case. So the professor of botany was called in to tell about the vine's growth.

Bacteriologists and entomologists can also help solve mysteries by correlating chemicals manufactured by putrefying bacteria with the life cycles of insects and larvae invading a body found some time after death.

Specialists in telling the mineral composition, structure and texture of rocks, by analyzing the dirt on a child's clothing and body, were able to rule out the probability of a hit-run accident having killed a little girl found dead of wounds that could have been made by a broken grill of a car.

These and other examples were given by Dr. Gerber of what he calls "associated evidence."

"It is only in the detective stories of fiction," he pointed out, "that the case is solved by one fact alone."

Associated evidence, though not infallible in itself, should be weighed against all other evidence before reaching a conclusion about the time of death. And many branches of science can be used to study and give the meaning of this associated evidence.

Science News Letter, January 5, 1952

PHYSIOLOGY

# Synthesize Firefly Light?

➤ HOPE FOR being able to manufacture artificially the stuff which makes fireflies glow was seen by Dr. E. Newton Harvey, professor of physiology at Princeton University, in intensive studies now under way there.

He pointed out that Princeton's Dr. H. S. Mason had recently found two types of luciferin in a shelled creature called *Cypridina*. Luciferin is a chemical compound which, when acted upon by the enzyme, luciferase, produces the emission of light which is characteristic of about 40 different animal groups and two plant groups.

These two types of luciferin are being intensely studied in the Princeton biological laboratories. The hope is that this study will lead to a knowledge of luciferin and finally to its synthesis.

Dr. Harvey said, in the annual Sigma Xi lecture before the American Association for the Advancement of Science meeting in Philadelphia, that there appears to be no definite evolutionary trend toward light-producing animals. Sometimes, he said, in higher animals, the photogenic cells which produce the light are surrounded by a reflector, a pigment screen and a lens, forming a complicated lantern. In other light-giving creatures, bacteria supply the source of light. Sometimes the host animal has developed an opaque screen which, like a shutter, controls the source of light.

Light of all colors has been seen in the various groups of light-emitting animals—red, yellow, green and blue. Some animals have developed lights of two or three different colors, said Dr. Harvey.

The lights are used, in some cases, to attract the opposite sex for purposes of mating, in other cases as a lure in obtaining food, or to scare off bigger fish in search of food for themselves.

Science News Letter, January 5, 1952

**Yosemite Field School**

***A Workshop in Interpretive Methods***

**Twenty selected college graduates will have the opportunity to spend the summer in Yosemite National Park under the tutelage of the National Park Service Naturalist Division. They will receive intensive, varied training in the presentation of natural and human history to the public, and in the techniques of interpretation—on nature walks, with children, at campfires. Also considered will be related matter such as museum methods and the use of museum and library materials. Twelve days will be spent in the High Sierra, an opportunity for maturing, exhilarating personal experience. Students pay own expenses, plus modest incidental fee.**

***Application deadline, February 28.***

***For prospectus, address:***

**DIRECTOR, YOSEMITE FIELD SCHOOL**

**Box 545**

**Yosemite National Park, California**

CHEMISTRY

## Synthesize Estrone from Ordinary Carbolic Acid

➤ A SUBSTANCE used as a disinfectant and in the manufacture of high explosives now has another use.

Phenol, ordinary carbolic acid, can be utilized, by means of a recently developed process, to produce estrone, which is chemically similar to the sex hormone of the human ovary.

Prof. W. S. Johnson of the University of Wisconsin department of organic chemistry and Dr. R. G. Christiansen, former Wisconsin graduate student, were able to make this chemical conversion by a novel and relatively short total synthesis of estrone.

Hormones are produced by certain glands and groups of cells and carried by the blood stream to various parts of the body. A too abundant supply of a hormone may have serious effects, and, similarly, inadequate amounts may be detrimental. Estrone is used by physicians in treating complications arising during the menopause, as well as certain types of recurrent abortion and disorders of the menstrual cycle.

The synthetic duplication of estrone in the procedure devised by Prof. Johnson and Dr. Christiansen starts with phenol, a cheap and relatively available chemical, and proceeds step by step until ultimately estrone is produced. Another chemical used in the early stages of this process is glutaric acid, which is a by-product in the manufacture of nylon.

Science News Letter, January 5, 1952

INVENTION

## Convert Automobile or Truck to Railway Use

➤ THE AUTOMOBILE or truck for highway travel is converted to run on railroad tracks with the addition of pivoted railway wheels on the front end and another pair on the rear.

Inventors are William S. Watts and Louis G. Carmick, Jr., Dearborn, Mich. They received patent 2,577,830. Evans Products Company, of Detroit, has acquired the patent rights.

Science News Letter, January 5, 1952

**REAL PANSY COASTERS**

Now create new and truly different gift articles like the beautiful pansy coaster shown—made by embedding real pansies in Castolite—the "magic" liquid casting plastic. With our simple step-by-step method you can make hundreds of valuable articles, including smart costume jewelry, chic HI-Style buttons, colorful key tags, tie-clasps, cuff links, plaques, tiles, many other things. Send 25c for Big Castolite Creations Manual. FREE with Manual, inspiring New Home-Success Plan. Write:

**CASTOLITE CO., Dept. A-50, Woodstock, Ill.**


# • Books of the Week •

**TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organization.**

ALCOA: An American Enterprise—Charles C. Carr—*Rinehart*, 292 p., illus., $3.50. The author was for many years director of public relations for the company whose history he tells.

THE BUTTERFLIES OF VIRGINIA—Austin H. Clark and Leila F. Clark—*Smithsonian Institution*, 239 p., illus., paper, $2.25. Describing some 154 species and subspecies.

ECLIPSES OF THE SUN—Samuel Alfred Mitchell—*Columbia University Press*, 5th ed., 445 p., illus., $6.50. The history of eclipses from the one described in the ancient Chinese classic Shu Ching, dated October 22, 2137 B.C. to the present, with a description of knowledge gained from their study.

ELEMENTS OF SOCIAL ORGANIZATION—Raymond Firth—*Philosophical Library*, 257 p., illus., $5.75. Based on the Josiah Mason Lectures given at the University of Birmingham (England) in 1947 discussing the role of social anthropology in contributing to a better understanding of some of the problems of modern civilization.

ENERGY SOURCES—THE WEALTH OF THE WORLD—Eugene Ayres and Charles A. Scarlott—*McGraw-Hill*, 344 p., illus., $5.00. An evaluation of our major sources of power prepared originally as a report to the American Petroleum Institute.

FERNS OF GEORGIA—Rogers McVaugh and Joseph H. Pyron—*University of Georgia Press*, 195 p., illus., $5.00. A distribution map showing where specimens have actually been collected or seen accompanies the drawing of each species. Keys are included.

GUIDE TO REFERENCE BOOKS—Constance M. Winchell—*American Library Association*, 7th ed., 645 p., $10.00. Describes about 5,500 currently useful reference works.

HANDLING APPLES FROM TREE TO TABLE—D. F. Fisher and Edwin Smith—*Govt. Printing Office*, USDA Circular No. 659, 43 p., illus., paper, 20 cents. How to get apples to the consumer in prime condition.

MODERN PYROMETRY—Charles H. Campbell—*Chemical Publishing Co.*, 150 p., illus., $4.00. For workers in metallurgy.

NORTH AMERICAN GEOSYNCLINES—Marshall Kay—*Geological Society of America*, 143 p., illus., $2.00. An understanding of geosynclines—deeply buried surfaces having definite limits—helps in understanding how continental margins developed.

PHARMACOPOEA INTERNATIONALIS, Vol. I—*World Health Organization (Columbia University Press)*, 406 p., $5.00. This volume is intended to facilitate commerce between nations in drugs and to reduce the hazard for travellers who may need to have the same prescription filled in different lands. In English.

THE PHEASANTS OF THE WORLD—Jean Delacour—*Scribner's*, 272 p., illus., $35.00. Brings up to date and completes Beebe's *Monograph of the Pheasants*, published in 1922. Many illustrations are in color. Embodies results of more than 50 years of research.

SHRUB PLANTINGS FOR SOIL CONSERVATION AND WILDLIFE COVER IN THE NORTHEAST—Frank C. Edminster—*Govt. Printing Office*, USDA Circular No. 887, 68 p., illus., paper, 30 cents. Use of shrubs for conservation has been neglected until recently. They have multiple uses; in addition to conservation of soil they provide food, material for decoration, and wildlife protection.

STARS: A Guide to the Constellations, Sun, Moon, Planets, and Other Features of the Heavens—Herbert S. Zim and Robert H. Baker—*Simon and Schuster*, 157 p., illus., $1.00 Another in the Golden Nature Guide series, illustrated by paintings in color and by photographs.

TABLES OF THE ERROR FUNCTION AND OF ITS FIRST TWENTY DERIVATIVES—Staff of the Computation Laboratory—*Harvard University Press*, 276 p., $8.00. A volume of six-place tables prepared to meet the specific requirements of applied statistics and modern physics.

TEACHERS CONTRIBUTE TO CHILD HEALTH—Elsa Schneider and Simon A. McNeely—*Govt. Printing Office*, Office of Education Bulletin 1951, No. 8, 44 p., illus., paper, 20 cents. Written primarily for prospective teachers and those in service but interesting to parents and others.

THE UNITED STATES PUBLIC HEALTH SERVICE 1798-1950—Ralph Chester Williams—*Commissioned Officers Association of the United States Public Health Service*, 890 p., illus., $7.50. The Service had its origin early in the life of the nation with an act for the relief of sick and disabled seamen.

UP THE MISSOURI WITH AUDUBON: The Journal of Edward Harris—John Francis McDermott, Ed.—*University of Oklahoma Press*, 222 p., illus., $3.75. This gentleman-farmer and amateur ornithologist of Moorestown, N. J., accompanied Audubon to Yellowstone.

Science News Letter, January 5, 1952

NUTRITION

## Meat and Protein Foods as Diet for Expectant Mothers

➤ THE DIET of the expectant mother should be prescribed by her doctor who knows whether there are any special foods she should eat or not eat. But her doctor may tell her to eat more meat or other protein food, such as fish, poultry, eggs, milk and cheese. A recent study shows that the babies are healthier if their mothers eat more proteins during pregnancy. The study was made at the University of Chicago's Lying-In Hospital and reported by Dr. William J. Dieckmann to the American Dietetic Association.

Science News Letter, January 5, 1952

ASTRONOMY

# Eclipsed Star's Light

➤ LIGHT FROM the smaller, hotter star of 31 Cygni was still shining through the rarefied atmosphere of its gigantic companion five or six weeks after the smaller star was no longer hidden behind its big brother.

"During several weeks before and after the eclipse, the hot star was behind various layers of the enormously extended atmosphere of the cool supergiant," Dr. Dean B. McLaughlin of the University of Michigan Observatory reported to members of the American Astronomical Society meeting at the Warner and Swasey Observatory in Cleveland.

The supergiant is about 30 times as far across as its smaller companion. Its diameter is at least 150 times that of the sun; that of the hotter star only five times as great.

The smaller star is many times hotter than its supergiant companion. It has a temperature of about 18,000 degrees Centigrade, as compared with only 4,000 degrees for the cooler star.

These two strangely-mated stars in the constellation of Cygnus, the swan, take a little over ten years to complete their swing around each other. Last fall's eclipse, the first to be studied, enabled astronomers at the Dominion Astrophysical Observatory, Victoria, B. C., to calculate the giant's size.

Only recently have astronomers suspected that 31 Cygni was an eclipsing double star. A year ago Dr. McLaughlin noted that the star's spectrum about a decade ago was similar to that of a few other supergiant eclipsing systems at the time when the light of the hot star shines through the atmosphere of the cool one.

He suggested that early this past fall the smaller star of 31 Cygni either would probably be eclipsed or would miss being eclipsed rather closely. Observations both at Victoria and Ann Arbor proved that the star is an eclipsing double star.

The star's spectrum, from which astronomers discover its composition, was also discussed. Dr. Andrew McKellar and G. J. Odgers of the Dominion Astrophysical Observatory and Dr. L. H. Aller of the University of Michigan discussed particularly ionized calcium in the giant star's atmosphere.

Science News Letter, January 5, 1952

MEDICINE

# Hip Disease Slows Growth

➤ WHEN THE growth center of the hip joint is attacked by disease, growth in general will be slowed and there will also be troublesome irregularities in tooth development, scientists at the Newington Home and Hospital for Crippled Children in Connecticut have discovered.

This combination of growth disorders, they find, is common to persons of white European stock but apparently is absent in the Negro, American Indian and Chinese.

These findings were reported by Dr. Charles Weer Goff of Yale School of Medicine, New Haven, Conn., at the meeting of the American Association for the Advancement of Science in Philadelphia.

Poliomyelitis slows growth both specifically and in general, Dr. Goff and associates have found.

Children with the brain injury that makes them "spastics," as they are commonly called, are short in stature. Curvature of the spine is quite common in these youngsters and they always show imbalance of growth.

Chemical studies of the blood of children are now being made at Newington Hospital in the hope of learning more about normal and abnormal growth. The level of the alkaline phosphatase in the blood plasma may turn out to be a useful sign of slowing growth, since the source of chemical is new bone-forming tissue.

"Posture, of course, influences and is influenced by growth in many ways," Dr. Goff declared.

Science News Letter, January 5, 1952

BIOCHEMISTRY

## Search for Anti-Cancer Drug Leads to Insect Poison

➤ DISCOVERY THAT the insect poison, rotenone, has "some promise" as a possible anti-cancer drug was announced by Dr. Ivor Cornman of George Washington University, Washington, D. C., and Dr. Edward F. Rogers of Merck and Co., Rahway, N. J., at the meeting of the American Association for the Advancement of Science in Philadelphia.

"Rotenone is not presented as a cancer cure," the scientists warned.

It has not been tried on animal or human cancers. But it does slow the division of sea urchin eggs and since cell division is the way cancers grow, a chemical that slows this process is looked on as at least potentially an anti-cancer chemical. Rotenone's effect on sea urchin eggs, moreover, shows up when the insect killer is used at the great dilution of two parts in a billion. This means it is very potent.

An antidote for rotenone poisoning may exist in vitamin E or alpha tocopherol. The scientists discovered this in trying to find more about how rotenone works to slow sea urchin egg division. When this cell division was slowed to one hour by rotenone, the hour delay could be brought down to 10 minutes by vitamin E. A 12-minute delay caused by rotenone could be wiped out completely by alpha tocopherol.

Rotenone, the research suggests, may act as an anti-vitamin.

Right now the scientists do not feel they have a cancer cure, but they do believe their researches are getting them nearer to understanding the chemistry involved in cell division. When this is better understood, a drug to stop cancer growth by cell division may be found.

Science News Letter, January 5, 1952

INVENTION

## Infra-Red Radiation For Orchard Protection

➤ INFRA-RED RAYS, from a radiant heater, to protect orchards from late spring and early fall frosts promise better protection than other methods long used, including the familiar oil-burning smudge pots.

Patent 2,577,410 was issued to Arthur W. Farrall, East Lansing, Mich., for this radiant heater. Rights are assigned to Research Corporation, New York.

Science News Letter, January 5, 1952

YOUR SKIN AND ITS CARE

By H. T. Behrman, M.D., and O. L. Levin, M.D.

Two dermatologists give you the up-to-date scientific facts. They tell you in detail exactly what to do to beautify and improve your skin, how to avoid or correct skin disorders, and how to deal with many skin problems as: Daily care of the face—allergies—cosmetics—pimples—blackheads—acne—whiteheads—cysts—boils—oily skin—dry skin—chapping—poison ivy—cold sores—hives—superfluous hair—ringworm—moles—birthmarks—scars—warts—tumors—skin cancer—excessive sweating—etc.

"The type of book to which the physician can refer his patients."—Journal of the American Medical Association.

"Accurate, unvarnished story of practical skin care."—Connecticut State Medical Journal

Price 2.50, incl. postage. 5-day-Money-Back-Guarantee

EMERSON BOOKS, Inc., Dept. 41-H, 251 West 19th Street, New York 11

R. P. CARGILLE

PRODUCTS FOR SCIENCE

A. Index of Refraction Liquids
B. Heavy Liquids — up to 7.5 Sp. Gr. For identification of gems and minerals
C. Shillaber's Immersion Oil For Microscopy
D. Sample Storage Set For storing small samples
E. Micro Beakers Glass; capacity 1 ml.
F. Transparent Plastic Boxes For specimens, small objects etc.

Descriptive leaflets on request.

R. P. Cargille 118 Liberty Street New York 6, N. Y.

# • New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N ST., Washington 6, D. C. and ask for Gadget Bulletin 603. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

*DOSIMETER TO detect high energy radiation in places where radioactive materials are used, is a one-inch square of a supersensitive type of glass which contains appreciable quantities of dissolved silver. Worn by workers as a dog-tag, it is unchanged in ordinary light but reveals the extent of exposure under ultraviolet rays.*

Science News Letter, January 5, 1952

*MILITARY MAPS from aerial photographs are accurately and quickly made with an improved type of plotter which projects a three-dimensional, measurable image on topographical map paper from a stereopair of photographs. A correction device built into it corrects aerial camera distortion.*

Science News Letter, January 5, 1952

*NAILING MACHINE, an automatic pneumatic tool for nailing down sub-floors and roof sheathing, can drive about 100 nails per minute. It is a portable device, to move over the boards after they are put in position and is guided by the operator with a foot stirrup. Nails are merely dumped into a box container.*

Science News Letter, January 5, 1952

*HIGH VELOCITY burner for fuel oils, which resembles a stove pipe, has within it a combination vaporizer, burner and a refractory-lined combustion chamber. Fuel and air entering one end are vaporized within the burner without any external vaporizing equipment. Complete combustion and high efficiency are claimed.*

Science News Letter, January 5, 1952

*MUSICAL PUP, for the youngster, is an imitation cocker spaniel within which is a small wind-up music box that plays a number of childhood favorite tunes. The fabric covering of the pup, shown in the photograph, its flappy ears and red nose are attractive to children.*

Science News Letter, January 5, 1952

*STEAM CLEANER, a portable type to remove grease and dirt from machinery and floors, will work on any steam supply from 60 to 150 pounds pressure and will produce from 45 to 90 gallons of boiling hot chemical spray per hour.*

Science News Letter, January 5, 1952

*SAFETY HARNESS for airplane passengers, combining the holding effects of seat belts and shoulder straps, is simple and easy to get into and out of and has but a single clasp to fasten. This improved, recently patented harness can be used as a seat belt alone if desired.*

Science News Letter, January 5, 1952

*MOVABLE HANDRAIL for stairways runs like the familiar type used on escalators. Recently patented, this endless handrail is designed to help persons climb the stairs. Relatively inexpensive and suitable for home installations it is placed either in the center or on the side of a stairway.*

Science News Letter, January 5, 1952

## Do You Know?

Examination of some 56,000 factory employees in England showed consistent superiority of the right *eye* over the left one.

*Nylon nets*, used in commercial fishing, can be stored away while still wet because they do not rot.

*Steel* one-tenth the thickness of a human hair has been developed for use in a secret electronic device.

*Water buffalo* are the best kind of meat cattle for the Amazon region, Brazilian experts have decided.

About 75% of the *rice* grown in the United States is raised in Arkansas, Louisiana and Texas.

A FEW MEMBERSHIPS ARE NOW AVAILABLE

in *Things* of science for 1952

ONCE A MONTH for a year we will pack a blue package with scientific fun, with mental stimulation, with hours of absorption, with future hobbies, with knowledge; but specifically we will pack the boxes with THINGS of *science*—real objects of science to be handled and looked at and owned. And with them, sheets of suggested experiments and complete explanations of them. There are now more than ten thousand members of the group of friends of science who receive one of these exciting boxes each month. This unusual service comes one year postpaid for $5.00. Use this coupon to send in your gift memberships NOW.

A WONDERFUL NEW YEAR'S GI

SCIENCE SERVICE
1719 N Street N. W. • Washington 6, D. C.

Send Things of Science for one year to the names and addresses on the attached sheet.
( ) Renew my own subscription for one year.
( ) Payment enclosed. ( ) Bill me.

DETROIT PUBL LIBRARY
TECHNOLOGY DEPT
66 PUTNAM AVENUE
DETROIT 2 MICH
DEC 52 483-786 G